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## **NETWORKING COMMANDS IN LINUX**

### **Aim:**

To study the basic networking commands in linux

Commands:

1. **tracpath:** The tracpath command is the same as the traceroute command, and it is used to find network delays. Besides, it does not need root privileges. By default, it comes pre-installed in Ubuntu. It traces the path to the destination and recognizes all hops in it. It identifies the point at which the network is weak if our network is not strong enough.

**Syntax:** tracpath

**<destination>**

2. **dig:** dig is short for Domain Information Groper. The dig command is an improvised edition of the nslookup command. It is utilized in DNS lookup to reserve the DNS name server. Also, it is used to balance DNS related problems. Mainly, it is used to authorize DNS mappings, host addresses, MX records, and every other DNS record for the best DNS topography understanding.

**Syntax:** dig

**<domainname>**

3. **route:** The route command shows and employs the routing table available for our system. Basically, a router is used to detect a better way to transfer the packets around a destination.

**Syntax:**

## Route

4. **host:** The host command shows the IP address for a hostname and the domain name for an IP address. Also, it is used to get DNS lookup for DNS related issues.

**Syntax:** host -t

**<resourceName>**

5. **whois:** The whois command fetches every website related information. We can get every information of a website, such as an owner and the registration information.

**Syntax:** whois

**<websiteName>**

5. **iftop:** The iftop command is utilized in traffic monitoring.

6. **ip:** It is the updated and latest edition of ifconfig command. The command provides the information of every network, such as ifconfig. Also, it can be used to get information about a particular interface.

**Syntax:**

1. ip a
2. ip addr

- 7.**ping:** It is short for Packet Internet Groper. The ping command is one of the widely used commands for network troubleshooting. Basically, it inspects the network connectivity between two different nodes.

**Syntax:** ping

**<destination>**

8. **netstat:** It is short for network statistics. It gives statistical figures of many interfaces, which contain open sockets, connection information, and routing tables.

**Syntax:**

Netstat

9. **nslookup:** The nslookup command is an older edition of the dig command. Also, it is utilized for DNS related problems.

**Syntax:** nslookup

<domainname

10. **iwconfig:** It is a simple command which is used to see and set the system's hostname.

**OUTPUT:**

```
(student@kali)-[~]
$ tracepath google.com
1?: [LOCALHOST] pmtu 1500
1: _gateway 0.460ms
1: _gateway 0.510ms
2: _gateway 0.471ms pmtu 1460
2: static-41.229.249.49-tataidc.co.in 3.162ms
3: 142.250.171.162 4.058ms asymm 7
4: no reply
5: no reply
6: no reply
7: no reply
8: no reply
9: no reply
```

```
(student@kali)-[~]
└─$ dig google.com

; <<>> DiG 9.19.21-1+b1-Debian <<>> google.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 55882
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 0

;; QUESTION SECTION:
;google.com.                IN      A

;; ANSWER SECTION:
google.com.                 221     IN      A      172.217.163.206

;; Query time: 0 msec
;; SERVER: 172.16.52.1#53(172.16.52.1) (UDP)
;; WHEN: Tue Nov 05 09:00:59 IST 2024
;; MSG SIZE rcvd: 44
```

```
(student@kali)-[~]
└─$ route
Kernel IP routing table
Destination    Gateway         Genmask         Flags Metric Ref    Use Iface
default        _gateway       0.0.0.0         UG    100    0      0 eth0
172.16.52.0    0.0.0.0        255.255.252.0   U     100    0      0 eth0
```

```
(student@kali)-[~]
└─$ host -t A google.com
google.com has address 172.217.163.206
```

```
└─$ whois google.com
Domain Name: GOOGLE.COM
Registry Domain ID: 2138514_DOMAIN_COM-VRSN
Registrar WHOIS Server: whois.markmonitor.com
Registrar URL: http://www.markmonitor.com
Updated Date: 2019-09-09T15:39:04Z
Creation Date: 1997-09-15T04:00:00Z
Registry Expiry Date: 2028-09-14T04:00:00Z
Registrar: MarkMonitor Inc.
Registrar IANA ID: 292
Registrar Abuse Contact Email: abusecomplaints@markmonitor.com
Registrar Abuse Contact Phone: +1.2086851750
Domain Status: clientDeleteProhibited https://icann.org/epp#clientDeleteProhibited
Domain Status: clientTransferProhibited https://icann.org/epp#clientTransferProhibited
Domain Status: clientUpdateProhibited https://icann.org/epp#clientUpdateProhibited
Domain Status: serverDeleteProhibited https://icann.org/epp#serverDeleteProhibited
Domain Status: serverTransferProhibited https://icann.org/epp#serverTransferProhibited
Domain Status: serverUpdateProhibited https://icann.org/epp#serverUpdateProhibited
Name Server: NS1.GOOGLE.COM
Name Server: NS2.GOOGLE.COM
Name Server: NS3.GOOGLE.COM
Name Server: NS4.GOOGLE.COM
DNSSEC: unsigned
URL of the ICANN Whois Inaccuracy Complaint Form: https://www.icann.org/wicf/
>>> Last update of whois database: 2024-11-05T03:31:44Z <<<
```

```
(student@kali) [~]
$ nslookup google.com
Server:      172.16.52.1
Address:     172.16.52.1#53

Non-authoritative answer:
Name:   google.com
Address: 172.217.163.206
Name:   google.com
Address: 2404:6800:4007:810::200e
```

```
(student@kali) [~]
$ netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 kali:56474             maa03s44-in-f3.1e:https ESTABLISHED
tcp        0      0 kali:42810             maa05s18-in-f14.1:https ESTABLISHED
tcp        0      0 kali:44916             maa05s19-in-f10.1:https ESTABLISHED
tcp        0      0 kali:48248             93.243.107.34.bc.:https ESTABLISHED
tcp6       0      0 172.16.52.174:1716     172.16.52.170:36294    ESTABLISHED
tcp6       0      0 172.16.52.174:49146    172.16.52.175:1716    ESTABLISHED
tcp6       0      0 172.16.52.174:34474    172.16.52.141:1716    ESTABLISHED
tcp6       0      0 172.16.52.174:1716     172.16.52.171:56152    ESTABLISHED
tcp6       0      0 172.16.52.174:58638    172.16.52.165:1716    ESTABLISHED
tcp6       0      0 172.16.52.174:58004    172.16.52.164:1716    ESTABLISHED
tcp6       0      0 172.16.52.174:1716     172.16.52.172:56164    ESTABLISHED
tcp6       0      0 172.16.52.174:35850    172.16.52.166:1716    ESTABLISHED
tcp6       0      0 172.16.52.174:42510    172.16.52.176:1716    ESTABLISHED
tcp6       0      0 172.16.52.174:47128    172.16.52.163:1716    ESTABLISHED
tcp6       0      0 172.16.52.174:48624    172.16.52.162:1716    ESTABLISHED
tcp6       0      0 172.16.52.174:56552    172.16.52.169:1716    ESTABLISHED

Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags       Type       State       I-Node  Path
unix   3      [ ]         STREAM     CONNECTED   7496
unix   3      [ ]         STREAM     CONNECTED   51929
unix   2      [ ]         STREAM     CONNECTED   21601
unix   3      [ ]         STREAM     CONNECTED   9084
unix   3      [ ]         STREAM     CONNECTED   12028
unix   3      [ ]         STREAM     CONNECTED   17917  /run/systemd/journal/stdout
unix   3      [ ]         STREAM     CONNECTED   17598
unix   3      [ ]         STREAM     CONNECTED   18742  /run/user/1000/bus
unix   3      [ ]         STREAM     CONNECTED   10456
```

```
(student@kali) [~]
$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host noprefixroute
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 88:ae:dd:15:ed:7f brd ff:ff:ff:ff:ff:ff
    inet 172.16.52.174/22 brd 172.16.55.255 scope global noprefixroute eth0
        valid_lft forever preferred_lft forever
    inet6 fe80::8aae:ddff:fe15:ed7f/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
```

```
(student@kali) [~]
$
```



```
L$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 172.16.52.174 netmask 255.255.252.0 broadcast 172.16.55.255
    inet6 fe80::8aae:ddff:fe15:ed7f prefixlen 64 scopeid 0x20<link>
    ether 88:ae:dd:15:ed:7f txqueuelen 1000 (Ethernet)
    RX packets 722837 bytes 369117393 (352.0 MiB)
    RX errors 0 dropped 3721 overruns 0 frame 0
    TX packets 87258 bytes 21103290 (20.1 MiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 57 bytes 3440 (3.3 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 57 bytes 3440 (3.3 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

```
L$ ping facebook.com
PING facebook.com (157.240.192.35) 56(84) bytes of data.
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=1 ttl=58 time=12.4 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=2 ttl=58 time=11.9 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=3 ttl=58 time=15.2 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=4 ttl=58 time=9.03 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=5 ttl=58 time=7.49 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=6 ttl=58 time=3.74 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=7 ttl=58 time=2.84 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=8 ttl=58 time=6.29 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=9 ttl=58 time=3.34 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=10 ttl=58 time=2.96 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=11 ttl=58 time=3.32 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=12 ttl=58 time=2.84 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=13 ttl=58 time=2.82 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=14 ttl=58 time=3.14 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=15 ttl=58 time=3.00 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=16 ttl=58 time=3.01 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=17 ttl=58 time=2.98 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=18 ttl=58 time=3.01 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=19 ttl=58 time=3.44 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=20 ttl=58 time=3.06 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=21 ttl=58 time=2.81 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=22 ttl=58 time=3.86 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=23 ttl=58 time=2.95 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=24 ttl=58 time=2.94 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=25 ttl=58 time=2.98 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=26 ttl=58 time=2.99 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=27 ttl=58 time=3.51 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=28 ttl=58 time=2.98 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=29 ttl=58 time=3.61 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=30 ttl=58 time=9.45 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=31 ttl=58 time=2.85 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=32 ttl=58 time=2.91 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=33 ttl=58 time=3.49 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=34 ttl=58 time=3.06 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=35 ttl=58 time=3.18 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=36 ttl=58 time=2.91 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=37 ttl=58 time=5.35 ms
64 bytes from edge-star-mini-shv-02-maa2.facebook.com (157.240.192.35): icmp_seq=38 ttl=58 time=3.93 ms
```

```
(student@kali)~$ iwconfig
lo          no wireless extensions.

eth0        no wireless extensions.
```

```
(student@kali)~$ iftop -i eth0
interface: eth0
IP address is: 172.16.52.174
MAC address is: 88:ae:dd:15:ed:7f
pcap_open_live(eth0): eth0: You don't have permission to perform this capture on
that device (socket: Operation not permitted)
```

### RESULT:

The linux networking command has been studied and the output is verified.